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by

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Abstract

Canadians look to primary health care providers for many of their basic health care needs, as well as for management of most chronic conditions. In 2000, the First Ministers agreed to promote the establishment of primary health care teams that would focus on health promotion, disease prevention, and management of chronic diseases. This study uses data from the Canadian Survey of Experiences with Primary Health Care (CSE-PHC) to assess the degree to which Canadians have access to primary health care teams and the impact of those teams on processes of care and on outcomes. The study is comprised of three projects: determinants of access to primary health care teams (Project 1); the impact of primary health care teams on various processes of care (Project 2); and identification of pathways through which primary health care teams affect outcomes of care (Project 3). The analytical techniques used include univariate analyses, multiple regression modelling and structural equation modelling. The results indicate that almost 40% of Canadians have access to a primary health care team, defined as access to a nurse or other health professional at their medical doctor or regular place of care. Individuals with two or more chronic conditions and those reporting "fair/poor" health are more likely to report access to a primary health care team (Project 1). Those who have access to a primary health care team are more likely to receive health promotion and disease prevention, particularly those who have chronic conditions. People with chronic conditions who have team-based care are more likely than those who do not to receive whole-person care and higher levels of care coordination. They are also more likely to report receiving a higher quality of health care (Project 2). Access to primary health care teams reduces emergency room use through reductions in unmet needs and in uncoordinated care. Reductions in uncoordinated care as a result of access to primary health care teams also reduce the risk of hospitalization. Access to primary health care teams was also found to enhance confidence indirectly through the effect of reduction in unmet needs and uncoordinated care on respondents' overall assessment of care. However, access to teams may have a negative direct effect on confidence when experiences with those teams do not result in improved processes of care (Project 3). Access to primary health care teams was found to have a positive influence on Canadians' perceptions of the overall quality of their health care system and the confidence they hold in it.

Keywords: primary health care, teams, processes of care, outcomes of care, chronic conditions, whole person care, coordination of care, multiple regression modelling, structural equation modelling.

Executive summary

Canadians look to primary health care providers for many of their basic health care needs, as well as for management of most chronic conditions. In 2000, the First Ministers agreed to promote the establishment of primary health care teams that would focus on health promotion, disease prevention, and chronic diseases. In 2004, they strengthened their commitment with the objective that half of Canadians would have access to multidisciplinary teams by 2011. Considerable investments have been made over the past decade in an effort to meet these goals.

The purpose of this study was to assess the degree to which Canadians have access to primary health care teams (Project 1) and the impact of those teams on processes of care and on outcomes (Projects 2 and 3). The study is based on data from the 2007 Canadian Survey of Experiences with Primary Health Care (CSE-PHC), the first national survey of primary care. The survey was sponsored by the Health Council of Canada and conducted by Statistics Canada.

The key results are:

- Almost 40% of Canadians have access to a primary health care team, defined as access to a nurse or other health professional (for example, dietitian, nutritionist) or both at their medical doctor or regular place of care.
- Individuals with two or more chronic conditions and those reporting "fair/poor" health were more likely than people in better health to report access to a primary health care team.
- Those who have access to a primary health care team are more likely to receive health promotion and disease prevention, particularly those who have chronic conditions.
- People with chronic conditions who have team-based care are more likely than those who do not to receive whole-person care and higher levels of care coordination. They are also more likely to report receiving a higher quality of health care.
- Access to primary health care teams reduces emergency room use through reductions in unmet needs and in uncoordinated care. Reductions in uncoordinated care also lessen the risk of hospitalization.
- Reductions in unmet needs and uncoordinated care, and the more positive ratings of quality of health care in general, indirectly enhance confidence in the health care system.
- However, access to teams may have a negative direct effect on confidence when experiences with those teams do not result in improved processes of care.

Introduction

Primary health care is typically the first point of contact for Canadians seeking health care. As such, it is often described as the "foundation of our health care system." Canadians look to primary health care providers for many of their basic health care needs and for management of most chronic conditions. For some time, Canadians have been asking for better access to primary health care services, better quality of care, and more health promotion and disease prevention services (Watson and Krueger 2005; Pollara Research 2006).

Over the past decade, significant investments have been made in support of interdisciplinary teams in order to strengthen primary health care in Canada. Between 1997 and 2001, the Health Transition Fund resulted in investments to test new modes of delivering care in the community. At that time, only four provinces required family physicians to work in groups and to work in interdisciplinary teams as a precondition for funding (Watson 2005). But in September 2000, the First Ministers agreed on the Action Plan for Health System Renewal, which included additional investments to catalyze primary health care so that "Canadians receive the most appropriate care, by the most appropriate providers, in the most appropriate settings." They agreed "to promote the establishment of interdisciplinary primary health care teams that provide Canadians first contact with the health care system." Such teams would also focus on health promotion, the prevention of illness and injury, and improved management of chronic disease. The First Ministers agreed to "accelerate primary health care renewal," in particular, to work toward ensuring timely access to services outside of expensive emergency departments" (Canadian Intergovernmental Secretariat 2000).

In response, the Government of Canada announced the Primary Health Care Transition Fund (PHC TF) in 2000, which established a policy framework to guide the investment of $800 million over five years, in support of implementing large-scale, primary health care renewal initiatives. Among the objectives were "to establish multi-disciplinary primary health care teams, so that most appropriate care is provided by the most appropriate provider," "to increase the emphasis on health promotion, disease and injury prevention, and chronic disease management," "to expand 24/7 access to essential services," and "to facilitate coordination with other health services (such as specialists and hospitals)" (Government of Canada Primary Health Care Transition Fund).

In 2003, the First Ministers' Accord on Health Care Renewal reaffirmed a national vision for primary health care renewal and established goals, objectives and requirements for federal transfer payments for a new five-year reform fund (Government of Canada 2003). In the Accord, the First Ministers declared, "The core building blocks of an effective primary health care system are improved continuity and coordination of care, early detection and action, better information on needs and outcomes, and new and stronger incentives to ensure that new approaches to care are swiftly adopted and here to stay." They agreed to the goal that by 2011, "at least 50% of residents have access to an appropriate health care provider, 24 hours a day, 7 days a week." In the 2004 First Ministers' 10-Year Plan to Strengthen Health Care, this target was described a little differently: "with the objective of 50% of Canadians having 24/7 access to multidisciplinary teams by 2011" (Health Canada 2004).

Canadians strongly support the idea of collaborative care, and the majority would prefer that their family doctor work as part of a team. They are attracted by the idea that primary health care teams would not only provide more coordinated, cost-effective care, but also would have a greater incentive to focus on wellness, prevention and patient education (Maxwell et al. 2002: vii). Canadians see the team approach, led by doctors, as the "centre piece of the health care system," because it would be "responsive to individual needs, structured to emphasize wellness and prevention, and would offer integrated and coordinated care through a team of various professionals" (Maxwell et al. 2002: 32 and 37). The majority of Canadians believe that collaborative care would expedite access to care and improve quality of patient care (Pollara Research 2003).

Health care policy-makers, administrators and providers recognize that a strong primary health care sector is necessary to address the needs of an aging population and of the increasing number of people who experience chronic disease, complex co-morbidity and/or functional disability (Watson 2005). In fact, significant investments in health care renewal have been made in sectors such as home care and pharmaceuticals for similar reasons (Health Canada 2004). All these investments coincide with a spike in public concern about health care in the late 1990s. According to public opinion polls conducted from 1999 to 2006, Canadians considered health care to be the most important issue facing the nation (Pollara Research 2006). Over that period, they were most likely to say that their confidence in the system was falling and that quality was deteriorating. The improvement that Canadians reported would make them feel more confident about the state of the health care system was better access (Soroka 2007).

The purpose of this study was to assess the degree to which Canadians have access to primary health care teams and the impact of those teams on care and outcomes. Each of the three projects was commissioned by the Health Council of Canada and conducted by Statistics Canada. The objectives were:

- To report on Canadians' access to primary health care teams and highlight patient characteristics associated with access to team care (Project 1).
- To report on the impact of primary health care teams on various processes of care—access to care, health promotion and disease prevention, coordination of care, quality of care, and comprehensiveness (including whole person care and coordination) (Project 2).
- To assess pathways through which primary health care teams affect outcomes of care in terms of confidence, emergency room use, and risk of hospitalization (Project 3).

Data

All analyses are based on data from the Canadian Survey of Experiences with Primary Health Care (CSE-PHC). The CSE-PHC was sponsored by the Health Council of Canada and conducted by Statistics Canada in January and February 2007. The survey sample consisted of 3,800 Canadians living in private households in the 10 provinces and 3 territories in 2005. The response rate was 58.1%, yielding a final sample of 2,194. The sample frame for this nationally representative, cross-sectional survey was respondents to the Canadian Community Health Survey (CCHS), cycle 3.1. Thus, residents of Indian Reserves, Crown lands, institutions and some remote regions, full-time members of the Canadian Forces, and residents (military and civilian) of Canadian Forces bases were excluded.

The purpose of the survey was to measure Canadians' experiences with primary health care in the previous 12 months, including access to various types of doctors and clinics and to different types of health care (for example, emergency room and prescription medications) and level of confidence. The survey also provides information about the primary health care experiences of people with chronic conditions. More information on the CSE-PHC is available on Statistics Canada's website (http://www.statcan.ca).

The study sample consists of respondents aged 18 or older who had a regular medical doctor or regular place of care. Appendix A contains the sample size for each analysis conducted within the three projects. Project 2 examines the total population aged 18 or older, as well as those with at least one of the following chronic conditions: arthritis, chronic obstructive pulmonary disease (COPD), heart disease, cancer, high blood pressure, diabetes and mood disorder, including depression.

Outcome variables

Primary health care team

Two questions from the CSE-PHC were used to create a measure of access to a primary health care team: *Is there a nurse working with your primary care provider who is regularly involved in your health care*? and *Other than your primary care provider, other doctors and a nurse, are there other health professionals like dieticians and nutritionists working in the same office where you get your regular health care?* These questions were asked only of individuals who responded "yes" to having a regular medical doctor or a regular place of care (n=2,120). A dichotomous measure of access to a team was created, whereby individuals who responded "yes" to either question were categorized as having access to a "primary health care team," while those who answered "no" to both questions were categorized as not having access to a team.

Processes of care

The following *process of care* measures were considered: health promotion and disease prevention, coordination of care, quality of care, access to care, and comprehensiveness of care (including whole person care and coordination).

Health promotion and disease prevention

Health promotion and disease prevention was constructed with three questions: *In the past 12 months, how often did your primary care providers give you the help you needed to make changes to your habits or lifestyle that would improve your health or prevent illness?*; *In the past 12 months, how often did your primary care providers talk with you about specific*

things you could do to improve your health or prevent illness (such as smoking cessation, alcohol consumption, exercise, stress, safe sex, etc...)?; and *In the past 12 months, how often did your primary care providers give you the help you wanted to reach or maintain a healthy body weight?* For each question, respondents were asked to provide one of the following: "always," "usually," "sometimes," "rarely," "never," "not applicable" or "don't know or refusal."

A composite score for health promotion and disease prevention was created using all valid responses, thus excluding "not applicable." It was assumed that a "not applicable" response represents the absence of the risk factor (for example, smoking, drinking, excess weight) that would have prompted primary health care providers to offer the relevant advice or assistance. To adjust for these cases, a composite measure was derived to represent the "% possible" health promotion each respondent could receive. This ensured that no case was unfairly penalized because of "not applicable" responses. For example, if one person replies to all three questions "always" receiving the health-promoting advice and assistance described, and for another individual only one of the questions was applicable, but the response was still "always," both cases should be considered as having received 100% of the maximum level of health promotion they could have received. Responses of "don't know" or "refusal" were deleted.

Because of the non-normal distribution of the health promotion and disease prevention measure, the scale was dichotomized at the 75% threshold (0 represents less than 75% of the promotion/prevention needed; and 1 represents 75% or more of the promotion/prevention needed), based on visual analyses to identify this natural cut-point.

Care coordination

Care coordination was measured with the following questions: *Thinking about the times you have received health care or procedures in the past 12 months, have you received conflicting information from different medical doctors or health care professionals?*; *In the past 12 months when getting care for a health problem was there ever a time when test results, medical records, or reasons for referrals were not available at the time of your scheduled doctor's appointment?*; and *In the past 12 months, when getting care for a health problem, was there ever a time when doctors ordered a medical test that you felt was unnecessary because the test had already been done?* The response categories for all three questions were "yes" or "no." Responses to the three questions were used to create a single dichotomous measure, where 0 represents no reports events of uncoordinated care and 1 represents at least one instance of uncoordinated care. "Not applicable" responses were considered to represent no instances of uncoordinated care.

Quality of care

Two questions were used to measure perceived quality of care: *Overall, how do you rate the quality of the health care that you received in the past 12 months from the primary care provider you rely on most for your care?* and *Overall, how do you rate the quality of health care that you have received in the past 12 months?* Since these two items measure different aspects of quality, they were maintained as separate process outcomes. In order to model both low-quality and high-quality care, the response categories ("excellent," "very good," "good," "fair" and "poor") for each of these measures were dichotomized in two ways: "fair/poor" versus "excellent/very good/good" and "excellent/very good" versus "good/fair/poor."

Access to care

Access to care was measured with the following question: *During the past 12 months, was there ever a time when you felt that you needed health care but you didn't receive it?* The response categories were "yes" or "no."

Comprehensiveness of care

Responses to the following question were used to assess comprehensiveness of care: *Your primary care provider delivers a range of services that meets most or all of your primary health care needs* and *Do you.... strongly agree, agree, disagree, strongly disagree?* The response categories were dichotomized as "strongly agree/agree" versus "disagree/strongly disagree."

Patient Assessment of Chronic Illness Care (PACIC) - Whole person care and coordination of care.

Two derived variables, "whole person care" and "coordination of care" were created from the PACIC instrument to measure views of medical care among people with chronic conditions (Glasgow et al. 2005). These two concepts were identified in previous factor analyses of the PACIC (McIntosh 2008). "Whole person care," or the extent to which a clinician elicits and considers the physical, emotional and social aspects of a patient's health and considers the community context in their care, is represented by 11 items; "coordination of care" is represented by 6 items (see Appendix B for a detailed definition of the

items). For each factor, its defining items were summed. The summary score for "whole person care" ranged from 4 to 55, while that for "coordination of care" ranged from 1 to 30.

Outcomes of care

Confidence in the health care system

A three-item module was administered to all CSE-PHC respondents to assess their level of confidence in the health care system: *Overall, how confident are you that if you become seriously ill, you will get quality and safe health care when you need it? Are you ... not at all confident, not very confident, somewhat confident, or very confident?; Overall, would you say that your confidence in the health care system is ... rising, falling, or about the same as it ever was?* and *What approach would you say that Canada's health system requires at present... a complete rebuilding from the ground up, some fairly major repairs, some minor tuning up, and everything is fine the way it is?* Previous confirmatory factor analysis of these three items verified that they all relate to a single underlying factor of confidence in the health care system (McIntosh 2008), so they were treated as indicators of a single factor. All three items were recoded so that higher observed scores, and thereby scores on the underlying factor reflected higher levels of confidence in the health care system.

Emergency room use

Respondents were asked: *How many times have you personally used a hospital emergency department in the past 12 months?* A dichotomous variable was created where 0 = "not at all" and 1 = "at least once."

Hospitalization

Respondents were asked: *In the past 12 months, have you been a patient overnight in a hospital, nursing home or convalescent home?* A dichotomous variable was created where 0 = "no" and 1 = "yes."

Independent variables

The independent variables include demographic characteristics (age and sex), socio-economic characteristics (education, employment and income), and health status (self-reported health and presence of chronic health conditions). Age was included in the analyses as a categorical variable with three groups: 18 to 44, 45 to 64 and 65 or older.

Respondents were categorized into four groups based on the highest level of education reported: less than high school graduation, high school graduation or some postsecondary, postsecondary graduation, and other education or training. Employment status was defined using the following four groups: full-time, part-time, retired and other (for example, unemployed, student, stay-at-home parent). Household income was classified in three groups: less than $30,000; $30,000 to $79,999; and $80,000 or more.

For health status, respondents were classified into one of the following three self-rated groups: excellent or very good health, good health, or fair or poor health. Individuals were identified as having "no selected chronic health conditions," "only one selected chronic condition," or "two or more selected chronic health conditions." The seven chronic conditions were arthritis, chronic obstructive pulmonary disease (COPD), heart disease, high blood pressure, diabetes, and mood disorders (including depression).

Missing values represent respondents who replied "don't know" or "refusal" to any relevant questions. The "analytic technique" section for each project details how missing data were accommodated.

Characteristics of study sample

Analytic technique

The weighted prevalence of various demographic, socio-economic, health status and health care indicators was calculated using the SAS software (version 9.1) for the total Canadian population aged 18 or older, as well as for those with at least one chronic condition. To account for the complex survey design, the bootstrap technique was used to estimate the variance and confidence intervals.

Results

Descriptive statistics for the full survey sample and for those with at least one chronic condition are provided in Table 1. Close to half (47.0%) of individuals in the full sample were aged 18 to 44. Those with at least one chronic condition tended to be older, and more than half of them (57.0%) were women. Just over half of respondents in the full sample were employed full-time, compared with 34.6% of those with at least one chronic condition. As expected, the majority (59.0%) of respondents in the full sample reported excellent or very good health, compared with 38.0% of those with at least one chronic condition. The majority of individuals in both samples reported having access to a regular medical doctor: 85.6% and 93.1%, respectively.

Table 1
Description of survey respondents, household population aged 18 and older, Canada, 2007

	Total (n=2,194)					At least one chronic health condition (n=876)				
Promotion/Prevention[1]	Sample size	Estimated population		95% confidence limits		Sample size	Estimated population		95% confidence limits	
	number	000s	%	from	to	number	000s	%	from	to
Age										
18 to 44	910	11,820	46.95	45.33	48.68	151	1,701	20.21	17.21	23.41
45 to 64	735	9,026	35.85	34.10	37.43	341	3,773	44.83	41.27	48.12
65 or older	549	4,329	17.20	16.41	18.05	384	2,941	34.95	32.19	37.80
Sex										
Male	953	12,362	49.11	48.67	49.52	334	3,617	42.98	39.77	46.02
Female	1241	12,813	50.89	50.48	51.33	542	4,798	57.02	53.98	60.23
Education										
Less than high school	410	4,323	17.17	15.53	19.27	238	2,276	27.05	23.30	30.95
High school or some postsecondary	823	9,424	37.43	34.81	39.58	310	2,646	31.44	27.90	35.59
Postsecondary graduation	910	10,830	43.02	40.69	45.41	305	3,289	39.08	34.57	42.60
Other education or training	37	458	1.82[E]	1.17	2.56	14	115	1.37[E]	0.59	2.24
Employment										
Employed full-time	1019	13,152	52.24	49.78	54.28	258	2,911	34.59	30.46	38.26
Employed part-time	220	2,707	10.75	9.07	12.27	74	877	10.42	7.60	12.72
Retired	389	4,694	18.65	16.92	20.65	151	1,457	17.31	14.57	20.64
Other[1]	565	4,610	18.31	17.19	19.73	392	3,159	37.54	34.37	41.09
Household income										
Less than or equal to $29,999	516	5,174	20.55	18.46	22.45	285	2,570	30.53	26.66	34.07
$30,000 to $79,999	892	10,113	40.17	38.09	42.99	322	3,167	37.63	33.42	41.83
Greater than or equal to $80,000	471	6,226	24.73	22.25	26.67	130	1,422	16.90	13.78	20.06
Missing	315	3,662	14.55	12.82	16.25	139	1,257	14.93	12.44	17.75
Self-reported health										
Excellent/Very good	1267	14,851	58.99	56.20	61.26	338	3,194	37.96	33.68	41.14
Good	640	7,506	29.81	27.44	32.24	328	3,230	38.38	34.80	42.39
Fair/Poor	266	2,667	10.59	9.32	12.29	196	1,891	22.47	19.35	26.21
Selected chronic conditions[2]										
None	1318	16,760	66.57	64.29	68.46	...	...	...	...	...
One	445	4,352	17.29	15.50	19.17	445	4,352	51.71	47.47	55.62
Two or more	431	4,064	16.14	14.68	17.90	431	4,064	48.29	44.38	52.53
Type of care										
Regular medical doctor	1903	21,536	85.55	83.62	87.22	826	7,838	93.13	91.13	95.25
Regular place of care	217	2,721	10.81	9.31	12.44	40	451	5.35[E]	3.50	7.10

... not applicable
[E] use with caution (coefficient of variation between 16.6% and 33.3%)
F too unreliable to be published (coefficient of variation greater than 33.3% or sample size less than 10)
1. For example, unemployed, student, stay-at-home parent.
2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).
Note: Percentages may not add to 100% because of missing, refusal and "don't know" responses.
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Project 1 - Determinants of primary health care teams

Analytic technique

Weighted univariate analyses of the determinants of access to a primary health care team were conducted on the full sample (n=2,194) using the SAS software (version 9.1). Multivariate logistic regression analyses were conducted using SAS-callable Sudaan (version 9.1.3) for individuals who reported having a primary health care provider and who did not have missing data on education, employment and self-reported health (n=1,812). Models were created incrementally starting with demographic characteristics, followed by socio-economic status characteristics, then health status variables, and finally, type of care. The full model is shown as well as adjusted odds ratios. The bootstrap technique was applied to all analyses to control for the complex survey design and to offer sensitivity analyses to validate results.

Results

Univariate analysis

Access to primary health care teams was defined as access to a nurse or other health professional (for example, dietitian, nutritionist) or both at respondents' regular medical doctor or place of care. Almost four in ten (39.3%) Canadians reported having access to a primary health care team (Table 2). In addition to their regular care provider, 6.1% of Canadians reported that they have access to both a nurse and other health professionals; 22.8% reported access only to a nurse; 10.4% reported access only to other health professionals; and 43.9% reported that they did not have access to either a nurse or other health professionals.

Table 2
Access to regular care and access to a primary health care team, household population aged 18 or older, Canada, 2007

Promotion/Prevention	Sample size	Estimated population		95% confidence limits	
	number	000s	%	from	to
Regular care with access to a primary health care team	**852**	**9,904**	**39.3**	**36.9**	**42.1**
Access to both nurse and other health professionals at regular care provider	137	1,534	6.1	5.0	7.3
Access to a nurse only at regular care provider	493	5,740	22.8	20.7	24.9
Access to other health professionals only at regular care provider	222	2,630	10.4	9.0	12.0
Regular care without access to a primary health care team	**993**	**11,056**	**43.9**	**41.3**	**46.4**
No regular care	**65**	**781**	**3.1**	**2.3**	**4.1**
Missing[1]	**284**	**3,435**	**13.6**	**11.6**	**15.3**
Total	**2,194**	**25,176**	**100.0**	...	

... not applicable
1. Includes respondents who reported "don't know" or "refusal."
Notes: Regular care is defined as having either a regular medical doctor or a regular place of care. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

The proportions with access to a primary health care team ranged from a low of 35.9% among men to almost half of those with fair or poor health (49.0%) or two or more chronic conditions (47.8%) (Table 3, row %). (Additional univariate results are presented in Table 3.)

Multivariate logistic regression

Results of the multivariate analysis indicate that health status and type of care are the primary factors associated with access to a primary health care team (Table 4). Individuals with two or more chronic conditions had approximately 1.5 times ($p<.05$) the odds of reporting access to a team, compared with those with no chronic conditions. Similarly, individuals reporting "fair/poor" health had 1.4 times the odds of reporting access to a team, compared with those in "very good/ excellent" health; however, the results were statistically significant only at the $p<.10$ level.

Respondents indicating that they had a regular medical doctor had lower odds (OR=0.56; $p<.05$) of having access to a team, compared with those who did not have a regular medical doctor, but reported having a regular place of care.

Table 3
Univariate distribution of determinants of access to a primary health care team, household population aged 18 or older, Canada, 2007

	Access to primary health care team							No access to primary health care team						
			Row %			Column %				Row %			Column %	
	Sample size	Estimated population	95% confidence limits			95% confidence limits		Sample size	Estimated population	95% confidence limits			95% confidence limits	
	number	000s	%	from	to	%	from	to	number	000s	%	from	to	%	from	to
Age																
18 to 44	347	4,539	38.4	35.0	42.5	45.8	42.7	49.5	378	4,779	40.4	36.3	43.8	43.2	39.6	46.3
45 to 64	287	3,680	40.8	36.1	45.0	37.2	33.4	40.1	357	4,215	46.7	42.4	51.5	38.1	34.8	41.7
65 or older	218	1,685	36.9	34.5	44.1	17.0	15.0	19.3	258	2,063	47.6	42.6	52.9	18.7	16.6	20.9
Sex																
Male	346	4,437	35.9	32.5	40.0	44.8	41.9	48.3	432	5,420	43.8	40.0	47.5	49.0	46.0	51.9
Female	506	5,467	42.7	39.2	46.0	55.2	51.7	58.1	561	5,636	44.0	40.6	47.4	51.0	48.1	54.0
Education																
Less than high school	168	1,816	42.0	36.2	48.0	18.3	15.3	21.6	173	1,783	41.2	34.8	47.1	16.1	13.5	18.9
High school or some postsecondary	316	3,546	37.6	33.7	41.6	35.8	31.6	39.3	376	4,302	45.6	42.0	49.8	38.9	35.5	42.3
Postsecondary graduation	345	4,261	39.3	35.7	43.7	43.0	39.2	47.3	422	4,743	43.8	39.8	47.2	42.9	39.3	46.1
Other education or training	15	224	48.8[E]	26.1	67.4	2.3[E]	0.9	3.5	16	145	31.7[E]	14.5	53.2	1.3[E]	0.5	2.3
Employment																
Employed full-time	390	5,162	39.2	35.8	43.1	52.1	48.0	55.9	443	5,507	41.9	38.2	45.4	49.8	46.2	52.8
Employed part-time	85	1,110	41.0	32.6	47.9	11.2	8.3	13.5	101	1,143	42.2	34.9	51.0	10.3	8.1	12.8
Retired	224	1,776	38.5	33.9	43.5	17.9	15.6	20.7	273	2,295	49.8	44.8	54.9	20.8	18.6	23.4
Other[1]	152	1,844	39.3	33.7	45.8	16.6	15.7	22.2	176	2,111	45.0	38.4	50.6	19.1	16.1	22.0
Household income																
Less than or equal to $29,999	198	1,939	37.5	32.8	43.5	19.6	16.7	22.9	244	2,444	47.2	41.3	52.4	22.1	18.7	25.0
$30,000 to $79,999	341	3,889	38.5	34.6	42.4	39.3	35.7	43.4	398	4,377	43.3	39.4	47.1	39.6	36.2	43.7
Greater than or equal to $80,000	187	2,583	41.5	35.7	46.5	26.1	21.8	29.1	221	2,723	43.7	38.9	49.5	24.6	21.4	27.9
Missing	126	1,493	40.8	34.6	48.2	15.1	12.3	18.1	130	1,512	41.3	34.0	47.9	13.7	10.8	16.3
Self-reported health																
Excellent/Very good	479	5,606	39.1	35.9	42.6	58.6	54.5	62.2	562	6,387	43.0	39.6	46.2	57.8	53.7	61.1
Good	247	2,757	36.7	32.2	41.5	27.8	24.3	31.4	304	3,548	47.3	42.7	52.0	32.1	28.5	35.9
Fair/Poor	120	1,308	49.0	41.8	56.2	13.2	10.8	16.0	115	1,020	38.2	31.6	45.6	9.2	7.4	11.6
Selected chronic conditions[2]																
None	488	6,230	37.2	34.1	40.7	62.9	59.2	66.6	574	7,178	42.8	39.4	46.0	64.9	61.0	68.2
One	168	1,732	39.8	33.9	45.4	17.5	14.3	20.5	221	2,125	48.8	42.9	54.6	19.2	16.4	22.2
Two or more	196	1,941	47.8	41.5	54.0	19.6	16.7	22.8	198	1,753	43.1	37.4	49.7	15.8	13.6	18.8
Type of care																
Regular medical doctor	758	8,675	40.3	37.7	43.3	87.6	84.8	90.3	918	10,199	47.4	44.5	50.2	92.3	90.0	94.2
Regular place of care	94	1,228	45.1	37.2	53.0	12.4	9.7	15.2	75	856	31.5	24.4	39.1	7.8	5.8	10.0

[E] use with caution (coefficient of variation between 16.6% and 33.3%)

1. For example, unemployed, student, stay-at-home parent.

2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).

Notes: Percentages may not add up to 100% because of missing, refusal and "don't know" responses. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.

Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table 4
Adjusted odds ratios relating selected characteristics to having access to a primary health care team, household population aged 18 or older with a regular medical doctor or a regular place of care, Canada, 2007

	Adjusted odds ratio	95% confidence limits	
		from	to
Age			
18 to 44	1.000	...	...
45 to 64	0.875	0.659	1.162
65 or older	0.878	0.553	1.393
Sex			
Male	1.000	...	...
Female	1.209	0.946	1.545
Education			
Less than high school	1.216	0.857	1.726
High school or some postsecondary	0.995	0.759	1.303
Postsecondary graduation	1.000	...	...
Other education or training	1.667	0.592	4.699
Employment			
Employed full-time	1.000	...	...
Employed part-time	1.022	0.683	1.527
Retired	0.793	0.510	1.234
Other[1]	0.811	0.560	1.174
Household income			
Less than or equal to $29,999	0.738	0.490	1.112
$30,000 to $79,999	0.902	0.662	1.227
Greater than or equal to $80,000	1.000	...	...
Missing	1.014	0.659	1.560
Self-reported health			
Excellent/Very good	1.000	...	...
Good	0.857	0.659	1.115
Fair/Poor	1.430*	0.971	2.106
Selected chronic conditions[2]			
None	1.000	...	...
One	1.074	0.759	1.519
Two or more	1.485**	1.028	2.145
Type of care			
Regular medical doctor	0.564**	0.377	0.844
Regular place of care	1.000	...	...

... not applicable
* significantly different from estimate for reference category ($p<0.10$)
** significantly different from estimate for reference category ($p<0.05$)
1. For example, unemployed, student, stay-at-home parent.
2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).
Note: A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Project 2 - Impact of primary health care teams on processes of care

Analytic technique

SAS software (version 9.1) was used to calculate the weighted prevalence of the ten primary process variables for the total population aged 18 or older, as well as for those with at least one chronic condition. To account for the complex survey design, the bootstrap technique was used to estimate the variance and confidence intervals.

Ten separate multivariate models were constructed to assess the relationship between access to a primary health care team and a range of process of care measures. The models were adjusted for patient characteristics including demographic characteristics, socio-economic status, and health status. Multivariate logistic regression analyses were conducted to model the odds of receiving 75% of the promotion/prevention needed (model 1); the odds of encountering at least one event of uncoordinated care (model 2); the odds of receiving fair/poor primary care (model 3); the odds of receiving excellent/very good primary care (model 4); the odds of receiving fair/poor overall care (model 5); the odds of receiving excellent/very good overall care (model 6); the odds of not receiving care when it was needed (model 7); and the odds of receiving a

comprehensive range of health care services (model 8). Multivariate linear regression models were conducted to asses the relationship between primary health care teams and whole person care (model 9) and coordination of care (model 10) among those with chronic conditions.

The bootstrap technique was applied to all regression analyses using SAS-callable Sudaan (version 9.1.3) to estimate the variance and confidence intervals to account for the complex survey design.

Results

Univariate analysis

Results of the univariate analysis reveal mixed results in terms of Canadians' experiences with specific processes of care. Overall, Canadians reported that the health care they received in general, and primary health care services specifically, were excellent or very good. Approximately 46% of individuals received at least 75% of eligible prevention and promotion services (Table 5). One in four (23.5%) indicated that they experienced at least one event of uncoordinated care. Approximately 10% indicated that they had an unmet need in the 12 months before the survey.

Table 5
Distribution of processes of care, Canada, 2007

	Total (n=2,194)					At least one chronic health condition (n=876)				
	Sample size	Estimated population		95% confidence limits		Sample size	Estimated population		95% confidence limits	
	number	000s	%	from	to	number	000s	%	from	to
Promotion/Prevention[1]										
Less than 75%	770	8,948	53.34	50.17	56.27	361	3,737	54.32	49.35	58.19
75% or more	729	7,827	46.66	43.73	49.83	346	3,142	45.68	41.81	50.65
Uncoordinated care[1]										
No	1,211	13,431	76.30	73.61	78.90	543	5,250	73.14	68.94	76.89
Yes	374	4,171	23.70	21.10	26.39	195	1,928	26.86	23.11	31.06
Quality of primary health care[1]										
Excellent/Very good/Good	1,499	16,578	92.57	90.87	94.19	699	6,799	94.48	92.25	96.44
Fair/Poor	112	1,330	7.43	5.81	9.13	42	398	5.52[E]	3.56	7.75
Quality of primary health care[1]										
Excellent/Very good	1,226	13,403	74.84	72.11	77.33	595	5,801	80.60	77.05	84.02
Good/Fair/Poor	385	4,505	25.16	22.67	27.89	146	1,396	19.40	15.98	22.95
Quality of overall health care[1]										
Excellent/Very good/Good	1,447	16,011	90.72	89.01	92.42	678	6,564	92.66	90.40	94.96
Fair/Poor	141	1,638	9.28	7.58	10.99	55	520	7.34	5.04	9.60
Quality of overall health care[1]										
Excellent/Very good	1,122	12,214	69.21	66.50	71.95	544	5,232	73.85	70.46	77.81
Good/Fair/Poor	466	5,434	30.79	28.05	33.50	189	1,853	26.15	22.19	29.54
Unmet needs[2]										
Yes	207	2,320	9.28	7.87	10.73	87	815	9.75	7.35	12.01
No	1,970	22,686	90.72	89.27	92.13	779	7,544	90.25	87.99	92.65
Receive comprehensive range of services[3]										
Yes (strongly agree/agree)	1,927	22,105	92.50	90.93	93.74	790	7,591	92.63	90.36	94.56
No (disagree/strongly disagree)	158	1,793	7.50	6.26	9.07	66	604	7.37	5.44	9.64
PACIC – Whole person care (mean)[4]	...	...	...	...	...	849	8,100	32.48	31.44	33.31
PACIC – Coordination of care (mean)[4]	...	...	...	...	...	845	8,086	12.46	11.89	12.92

... not applicable
[E] use with caution (coefficient of variation between 16.6% and 33.3%)
1. Asked of respondents 18 years and older who had seen or talked to a family doctor or general practitioner at least over the past 12 months.
2. Asked of respondents 18 years and older.
3. Asked of respondents 18 years and older who have a regular medical doctor or a regular place of care.
4. Asked of respondents 18 years and older who have at least one chronic condition.
Note: Percentages may not add to 100% because of missing, refusal and "don't know" responses.
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Multivariate logistic regression

Access to primary health care teams was significantly associated with a range of process indicators when adjusting for patient characteristics. Individuals with a primary health care team had significantly higher odds of reporting that they received 75% or more of the promotion/prevention needed (OR=1.297; p<0.10) than did those who did not have a primary health care team (Table 6 model 1). Among people with chronic conditions, those with access to a primary health care team had 1.57 (p<.05) times the odds of having received the required prevention/promotion services, compared with their counterparts who did not have access to a team (Appendix D contains complete model results).

People with a chronic condition who had access to a primary health care team were significantly less likely to report fair/poor primary health care (OR=0.260; p<0.05) or fair/poor overall health care (OR=0.395; p<0.05) than were those with no access to a primary health care team (Table 6, models 3 and 5). As expected, the former were more likely to report excellent/very good health care overall (OR=1.65; p<.05).

The results of multivariate linear regression models reveal a positive association between access to primary health care teams and chronic disease management. People with a chronic condition who had access to a primary health care team reported a higher level of whole person care, scoring, on average, 13.578 points higher on the summary score (p<0.05) than did those with no primary health care team. Similarly, individuals with a primary health care team reported greater care coordination, scoring, on average, 1.288 points higher on the summary score (p<0.05) than did those with no primary health care team.

Table 6
Adjusted odds ratios relating access to a primary health care team with various processes of care, household population 18 years and older with a regular medical doctor or regular place of care, Canada, 2007

	Total			At least one chronic condition		
Process outcomes	Adjusted[1] odds ratio	95% confidence limits		Adjusted[2] odds ratio	95% confidence limits	
		from	to		from	to
Model 1 Likelihood of receiving 75% of the promotion/prevention needed[2]	1.297*	0.983	1.711	1.573**	1.023	2.418
Model 2 Likelihood of encountering at least one event of uncoordinated care[2]	0.939	0.687	1.283	1.236	0.798	1.914
Model 3 Likelihood of receiving fair/poor quality primary health care[2]	0.753	0.424	1.337	0.260**	0.084	0.802
Model 4 Likelihood of receiving very good/excellent quality of primary health care[2]	1.073	0.781	1.475	1.459	0.874	2.436
Model 5 Likelihood of receiving fair/poor quality overall health care[2]	0.719	0.439	1.177	0.395**	0.177	0.879
Model 6 Likelihood of receiving very good/excellent quality of overall health care[2]	1.225	0.915	1.639	1.645**	1.041	2.601
Model 7 Likelihood of not being able to access health care when needed	0.763	0.497	1.171	0.618	0.334	1.145
Model 8 Likelihood of receiving a comprehensive range of health care services	1.319	0.837	2.080	1.502	0.675	3.341
Model 9 Linear regression coefficient of PACIC "whole person care" summary score[3]	...	...		13.578**	8.372	18.783
Model 10 Linear regression coefficient of PACIC "coordination of care" summary score[3]	...	...		1.288**	0.045	2.531

... not applicable
* significantly different from estimate for reference category (p<0.10)
** significantly different from estimate for reference category (p<0.05)
1. Models adjusted for age, sex, education, income, employment, self-reported health and presence of chronic conditions, except for models 9 and 10 which were not adjusted for presence of chronic conditions.
2. Among respondents 18 years and older who had seen or talked to a family doctor or general practitioner at least over the past 12 months.
3. Among respondents 18 years and older who have at least one chronic condition.

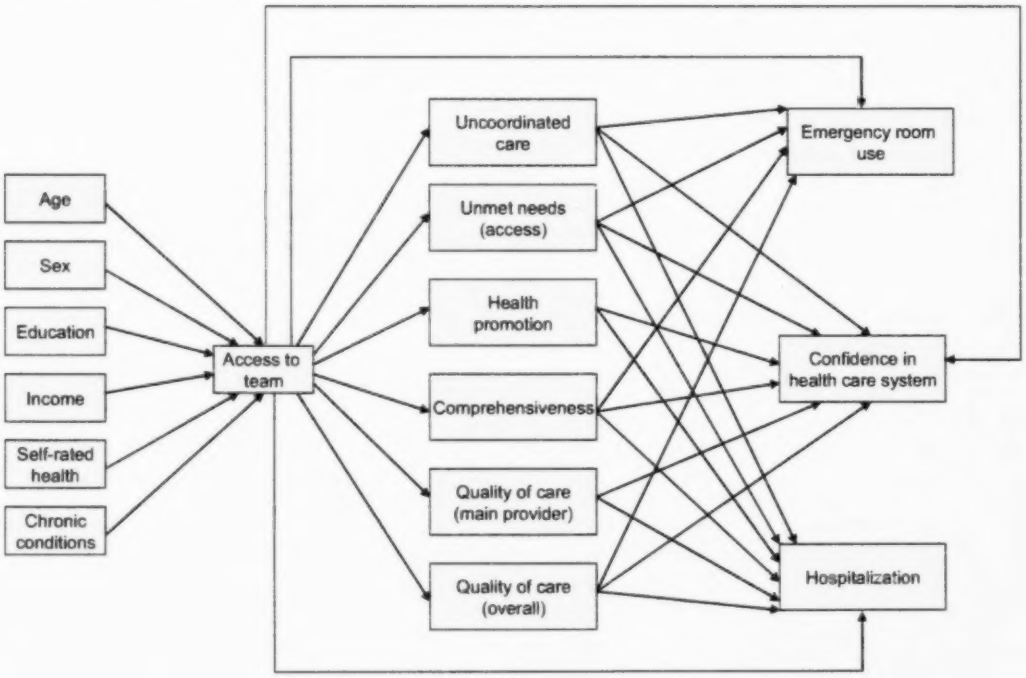
Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health, and presence of chronic conditions. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Project 3 - Pathways linking primary health care teams and outcomes of care

Analytic technique

The final project takes a comprehensive approach to assess the underlying relationships between primary health care teams and outcomes of care. At the front end of the model is a set of respondent characteristics that are expected to be associated with access to primary care teams and which are included as control variables. Access to primary health care teams is held to influence several primary health care processes, which, in turn, are hypothesized to affect three outcomes of care: confidence in the health care system, emergency room use, and risk of hospitalization. These three outcomes are considered in a single model with hypothesized relationships between the relevant variables (Figure 1). These hypothesized relationships were defined on the basis of a performance measurement and accountability framework that was established for this sector following: (a) policy analyses to identify goals and objectives relevant to primary health care renewal in Canada; (b) a literature review to substantiate relationships between primary health care inputs, activities and outcomes; and (c) consultations with more than 650 researchers, policy-makers, administrators and health care providers (Watson et al. 2004).

Figure 1
Hypothesized structural equation model



The model is estimated using structural equation modeling (SEM) (Millsap 2002), a technique designed to test the consistency between complex theoretical models and observed data.

This approach allows for a statistical evaluation of a more dynamic perspective on the outcomes of primary health care teams, and will help indicate potential areas for intervention; specifically, the extent to which modifications in upstream variables (for example, access to primary health care teams) can improve health care outcomes via primary health care processes.

SEM is based on regression techniques, but extends them to the situation where certain variables function as both predictors and outcomes. This flexibility allows for a more meaningful statistical representation of a given theoretical perspective on

the interrelations among a set of variables. SEM can estimate regression coefficients corresponding to all of these hypothesized linkages simultaneously, as well as compute estimates of indirect or mediated effects that quantify certain "chain reactions" among the key variables (for example, the effect of access to primary health care teams on outcomes of care, through various processes of care). Furthermore, including the direct effects from access to primary health care teams on the three outcomes (confidence in the health care system, emergency room use, and risk of hospitalization) makes it possible to decompose the total effects into direct and indirect effects, in order to evaluate the degree to which the mediators (processes of care) account for the overall association observed between primary health care teams and outcomes of care.

Variable definitions

For the SEM component of this study, most of the variables were defined in exactly the same way as in Projects 1 and 2. Some exceptions should be noted. First, those reporting "other education or training" (n = 37) were not considered in this analysis, since the SEM required that response categories on all categorical variables be ordered on a continuum. Second, while response categories for certain variables were collapsed for the purposes of the multivariate logistic regression, they were left separate for the SEM in order to maximize all available information. Specifically, self-rated health and quality of care (both from primary care provider and in general) were modeled using the full set of response categories, recoded so that higher scores reflected better self-rated health and quality of care: 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent. Further, comprehensiveness was defined using its original five-point scale, recoded so that higher scores represented more comprehensive care: 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree. Distribution of outcomes of care variables are presented in Appendix E.

Modeling strategy and estimation method

The SEM modeling was conducted with the Mplus software package (version 5.0) (Muthén and Muthén 1998-2007), using a weighted least squares estimator with a mean- and variance-adjusted chi-square (WLSMV) (Flora and Curran 2004; Muthén, du Toit and Spisic in press). All links within the model were represented by regression equations that respected the nature of the particular dependent variable (Muthén and Muthén 1998-2007). For the dichotomous and ordered-categorical dependent variables (for example, access to primary health care teams, rating of quality of care), probit regressions were used. This method assumes that the crude response categories on the dependent variable are merely "thresholds" on an underlying, normally distributed continuous variable. This assumption is reasonable in the majority of applications. For example, there will usually be a true continuum of "agreement" with survey items measuring attitudes, even though for operational reasons only a limited number of response categories (for example, 1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree) are provided. Individuals are believed to fall into a given discrete category on the observed scale because they exceed a given threshold value on the continuous underlying response variable. This assumption allows the statistical convenience of modeling the underlying continuous response variable, which is placed in the standard normal (z-score) metric, rather than the observed categorical variable.

Continuous outcomes were modeled using linear regressions. One of the continuous outcomes was health promotion/prevention (defined earlier as the "% possible" health promotion for each respondent), and the other was a latent variable of confidence in the health care system. Modeling these items as reflections of a single continuous latent variable allowed them to be more parsimoniously represented, and also removed measurement error. The latent variable of confidence in the health care system was itself predicted here by access to primary health care teams and various processes of care.

Handling missing data

Under the WLSMV estimator, missing data can be accommodated by allowing the inclusion of both complete and incomplete cases in the analysis, using a two-step approach (Muthén and Muthén 1998-2007). In Step 1, all of the observed outcomes are regressed simultaneously on the exogenous covariates, permitting missing values to be modeled as a function of the covariates (in this case, age, sex, education, income, self-rated health, and presence of chronic conditions). Although no missing values are actually imputed, the conditional distribution of the missing values with respect to the covariates can be to some extent inferred, or "borrowed," from the complete data regressions. This multivariate regression, therefore, produces a more robust set of SEM input statistics (for example, thresholds, intercepts, regression coefficients, and residual correlations), preserving all of the information in the complete data and augmenting it with available information from the incomplete cases. The only cases excluded from the initial multivariate regression analysis are those with missing data on the exogenous covariates and/or all of the observed outcomes. In Step 2, the SEM is fitted to the input statistics generated by the multivariate regression in Step 1. This procedure is superior to the more conventional approaches of listwise or pairwise deletion of

missing cases prior to analysis, which can yield severely biased results unless the data are missing completely at random (Little and Rubin 2002; Allison 2003).

Weighting

To obtain unbiased estimates of the factor model parameters, sampling weights were applied to account for unequal selection probabilities (Asparouhov 2006; Kaplan and Ferguson 1999). Bootstrap variance estimates were not computed, since Mplus 5.0 does not have a facility for replicate weights.

Assessing model fit

A variety of indices were used to assess model fit. To test the overall goodness-of-fit, the chi-square (χ^2) statistic was used. The χ^2 tests whether the data are significantly different from the model. However, χ^2 is positively correlated with sample size if the model is not exactly correct (Browne and Cudeck 1993). Given that most statistical models are at best approximations of reality rather than exact matches (McDonald and Marsh 1990), χ^2 was supplemented with three widely used approximate fit indexes that are relatively unaffected by sample size: the Comparative Fit Index (CFI; Bentler 1990), the Tucker-Lewis Fit Index (TLI)(Bentler and Bonett 1980), and the Root Mean Squared Error of Approximation (RMSEA) (Steiger 2000). Further, in the event that the initial theoretical model did not fit the data, Lagrangian Multiplier (LM) tests were used to locate additional pathways to estimate (Bentler and Chou 1993).

The CFI compares the fit of the theoretical model to the fit of an alternative "null" model that assumes the observed variables are completely uncorrelated. The CFI ranges between 0 and 1, with values ≥ 0.90 reflecting a well-fitting model (Bentler 1990). The TLI also assesses the fit of the theoretical model relative to a null model, but provides an adjustment for the degrees of freedom (df). As with the CFI, TLI values ≥ 0.90 imply good fit, but TLI values can fall outside the 0-1 interval. The RMSEA measures the average amount of misfit between the model and the data, across all df. The RMSEA ranges from 0 to $+\infty$, with values ≤ 0.10 or less indicating an adequate fit (Browne and Cudeck 1993).

Finally, the LM test (Bentler and Chou 1993) determines which paths could be added to the model to improve it. For each pathway that is not initially estimated, the LM test shows the reduction in the χ^2 test statistic that would be produced by estimating the pathway. Significant LMχ^2 values (evaluated on one df) suggest that it is reasonable to add a given path, as long as the modification also makes theoretical and methodological sense.

Assessing direct and indirect effects

As well as evaluating global model fit, it is important to examine the magnitude and significance of the individual parameter estimates; specifically, the estimates of the direct and indirect effects within the model (MacKinnon, Fairchild, and Fritz 2007). The direct effect of one variable on another is an effect that is not transmitted through any intervening variables. For example, the effect of access to primary health care teams on health promotion is a direct effect, since no other variables lie on this pathway. On the other hand, an indirect effect passes through a number of intermediaries. For example, the model postulates indirect effects of access to primary health care teams on confidence in the health care system, via all of the process variables.

All direct effects are estimated simultaneously, and each is tested using a critical ratio statistics (z-tests). Indirect effects are estimated afterward, on the basis of the direct effects. Two approaches are taken here to evaluate the indirect effects: the product of direct effects method and the joint significance of direct effects method (MacKinnon et al 2002). Under the product of direct effects method, the point estimate of a given indirect effect is the product of all the intervening direct effects that lie along a particular process of care "conduit" connecting access to primary health care teams with the specific final outcome of interest. The standard errors of the indirect effects are then computed as a complex combination of the standard errors of the constituent direct effects, allowing for a critical ratio test of the significance of the indirect effect. Under the joint significance of direct effects method, no point estimate of the indirect effect is computed; rather, the requirement is statistical significance of each and every direct effect that lies along a specific pathway from access to primary health care teams to a given final outcome.

The advantage of the product of direct effects method is that it quantifies the indirect effect itself. However, each direct effect in the chain must be fairly large in order to yield a substantial product, and consequently, the method may be underpowered if one or all of the constituent direct effects are small in magnitude. Thus, the joint significance of direct effects is used as a supplemental test for the presence of indirect effects (MacKinnon et al 2002).

Finally, the tests of the direct effects of access to primary health care teams on the outcomes can be used to evaluate the extent of mediation, that is, the degree to which the proposed mediators (processes of care) account for the relation between teams and the final outcomes. In particular, if both significant direct and indirect effects are found, then the mediator variables do not completely explain the association between access to primary health care and a given outcome. If, however, there is no remaining direct effect of access to primary health care teams on a given final, then the impact of teams on that outcome is considered to be fully mediated by processes of care.

The results of the SEM may be incongruent with those from the preceding multivariate logistic regression analyses carried out in Project 2. SEM relies on a different estimation procedure and a more complex model specification than the previous multivariate logistic regression analyses. Specifically, the estimation method selected for the SEM was a robust weighted least squares procedure, while the multivariate logistic regression used maximum likelihood. Moreover, the SEM encompasses many of the variables previously explored as single outcomes in a series of multivariate logistic regressions, and postulates a system of more complex connections among them. Further, the missing data method described above permits incomplete cases to be used in the analysis, whereas in the logistic regression, only complete cases were used. Therefore, a different pattern of statistical results is possible, with correspondingly different substantive implications. All model fit statistics are summarized in Table C.1.

Results

Estimation of initial model

After applying the missing data procedure described previously, 1,257 cases could be retained for the SEM analysis. The initial hypothesized model (Figure 1) differed significantly from the data according to the strict χ^2 test (χ^2 [df = 50, N = 1257] = 592.144, $p < 0.001$), and also did not fit very well according to the approximate fit indexes (CFI = 0.835; TLI = 0.825; RMSEA = 0.093). Since lack of model fit at the global level means that individual parameter estimates can be biased, attempts were made to modify the model structure in order to achieve a satisfactory fit before moving on to inspect the individual estimates.

Re-specification and re-estimation of model

To determine how the model could be most appropriately modified to improve fit, the results of LMχ^2 tests were examined, and paths were added to the model in a stepwise fashion. At each step, the suggested modification corresponding to the greatest improvement in statistical fit was added to the model, followed by re-estimation of the model. Further, each modification had to be conceptually and methodologically reasonable. Table 7 summarizes the steps taken to achieve acceptable fit.

Table 7
Model modification history

Modeling attempt	χ^2 test statistic	Approximate fit indexes	Top suggested model modification	LMχ^2 value for top suggested model modification
1	χ^2 (df = 50, N = 1,257) = 592.144, $p < 0.001$	CFI = 0.835 TLI = 0.825 RMSEA = 0.093	Regress Quality2 (health care in general) on Quality1 (health care provider)	LMχ^2 (df = 1, N = 1,257) = 130.301, $p < 0.001$
2	χ^2 (df = 48, N = 1,257) = 472.503, $p < 0.001$	CFI = 0.871 TLI = 0.857 RMSEA = 0.084	Regress Quality1 (health care provider) on Comprehensiveness	LMχ^2 (df = 1, N = 1,257) = 92.670, $p < 0.001$
3	χ^2 (df = 47, N = 1,257) = 380.796, $p < 0.001$	CFI = 0.898 TLI = 0.885 RMSEA = 0.075	Regress Comprehensiveness on Health Promotion	LMχ^2 (df = 1, N = 1,257) = 55.820, $p < 0.001$
4	χ^2 (df = 45, N = 1,257) = 309.237, $p < 0.001$	CFI = 0.919 TLI = 0.905 RMSEA = 0.068		

. not available for any reference period

Notes: Modeling attempt 1 is for the original theoretical model depicted in Figures 1 and 2; modeling attempts 2 and 3 incorporate all preceding top suggested model modifications; "N/A" with respect to modeling attempt 4 represents the fact that at this point, satisfactory fit was achieved according to all approximate fit indexes, and so no further LM test results were consulted.

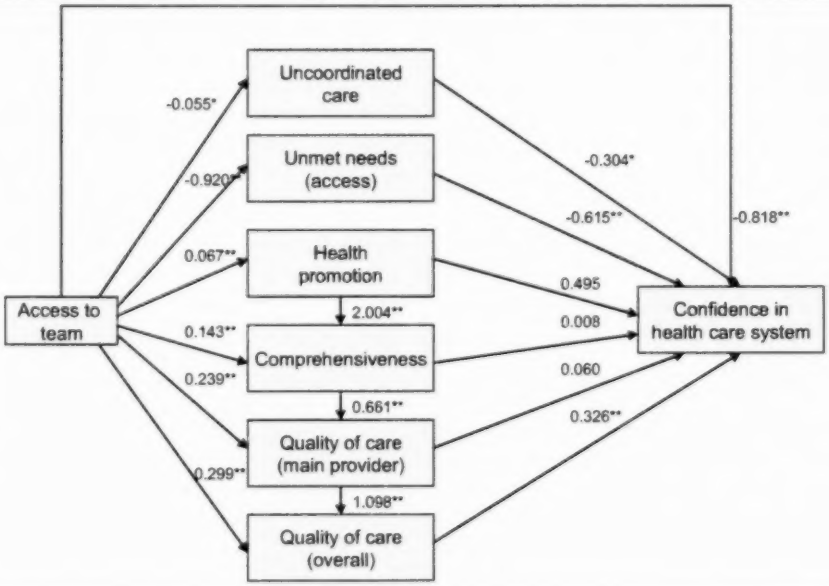
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

All of the modifications suggested by the LM procedure appeared sensible. First, it seemed reasonable that the quality of care provided by an individual's primary health care provider would influence that person's ratings of the quality of care received in general, since the former is essentially encapsulated in the latter. Second, it would be expected that perceptions of the comprehensiveness of care delivered by the main provider would influence evaluations of the quality of that provider's care. Third, a relation between health promotion and comprehensiveness is plausible, since health promotion reflects one element of comprehensiveness or scope of care. The modification process was ceased once an acceptable fit was achieved. Making too many modifications could increase the risk of capitalization on chance features of the current sample, and would ultimately lead to a saturated model that would be difficult to meaningfully interpret.

Final model

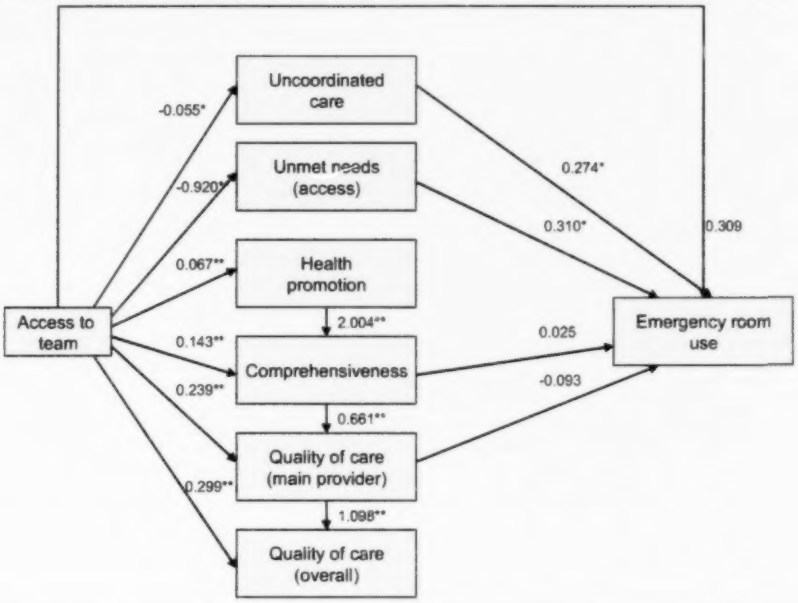
Figures 2, 3, and 4 display the parameter estimates for the final model, which incorporates the modifications described in Table 7. (For legibility, one diagram is shown for each ultimate outcome, although all three outcomes are modeled simultaneously). It is difficult to assign precise substantive meaning to the estimated coefficients in Figures 2 to 4 because of the manner in which many of the variables are modeled. In particular, for the categorical dependent variables (for example, access to primary health care teams, perceived quality of care) a continuous, standardized variable is assumed to underlie the rough observed categories, and is generated for modeling purposes. For instance, the coefficient of .299 linking access to primary health care teams and perceived quality of health care in general means: For an increase of one standard deviation unit in the assumed underlying continuous variable "degree of access to primary health care team," there is a 0.299 standard deviation increase in "degree of quality of health care in general." In turn, a one-unit increase in "degree of quality of health care in general" leads to 0.322 unit increase in "confidence in the health care system," which is a continuous latent variable. It is possible to extrapolate from this example to interpret other pathways; however, because of the scale-free nature of many the variables, it is more appropriate to focus on the statistical significance and direction of the pathways rather than to try to provide an exact substantive interpretation to their estimated values. This is the approach taken here.

Figure 2
Final estimated model, confidence in health care system as final outcome



* coefficient significant at 0.05 level
** coefficient significant at 0.01 level
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Figure 3
Final estimated model, emergency room use as final outcome



* coefficient significant at 0.05 level
** coefficient significant at 0.01 level
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

As shown in Figures 2 to 4, access to primary health care teams significantly predicts all of the modeled processes of care. In particular, access to primary health care teams reduces both uncoordinated care and unmet needs, while at the same time increasing health promotion, comprehensiveness, and perceived quality of care received from the primary health care provider and in general.

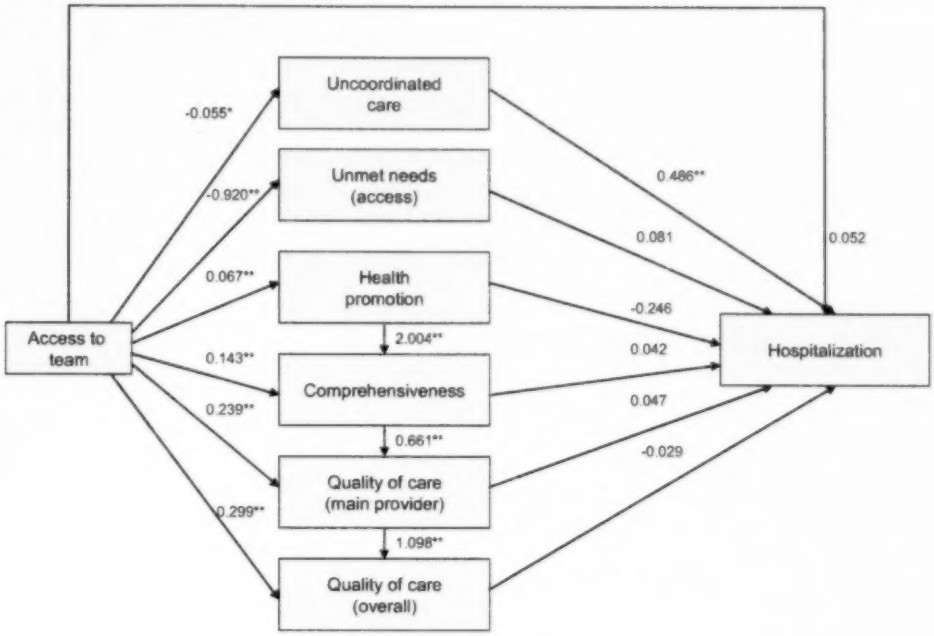
With regard to the effects of processes of care on the final outcomes, it was shown that confidence in the health care system is reduced as a result of experiencing uncoordinated care and unmet needs, but increased by receiving higher quality of care in general (Figure 2). As well, emergency room use is increased as a result of experiencing uncoordinated care and unmet needs (Figure 3). Finally, risk of hospitalization is increased as a result of experiencing uncoordinated care (Figure 4).

Contrary to initial expectations, certain process variables - health promotion, comprehensiveness, and quality of care from one's main provider - did not directly predict either confidence in the health care system or risk of hospitalization. However, the model modification indices revealed relationships among the process variables that were not originally hypothesized (see also Table 7). Specifically, greater health promotion led to increased reports of comprehensiveness, which in turn, enhanced perceptions of the quality of care delivered by the primary provider; this last positively predicted quality of health care in general. More positive experiences of quality of health care in general increased confidence in the health care system. This association was not significant for emergency room use or risk of hospitalization.

Further, having access to a primary team indirectly enhanced confidence in the health care system, as well as indirectly reduced emergency room use and hospitalization, via different processes of care. In particular, the following indirect routes are significant according to both methods applied for testing indirect effects (the product of direct effects and joint significance of direct effects methods):

- Access to Primary Health Care Teams → Access to Care (Unmet Needs) → Confidence in Health Care System (0.566, $p < 0.05$)
- Access to Primary Health Care Teams → Quality of Health Care (General) → Confidence in Health Care System (0.097, $p < 0.01$)

Figure 4
Final estimated model, hospitalization as final outcome



* coefficient significant at 0.05 level
** coefficient significant at 0.01 level
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

- Access to Primary Health Care Teams → Quality of Health Care (Main Provider) → Quality of Health Care (General) → Confidence in Health Care System (0.086, $p < 0.01$).
- Access to Primary Health Care Teams → Comprehensiveness → Quality of Health Care (Main Provider) → Quality of Health Care (General) → Confidence in Health Care System (0.034, $p < 0.05$).
- Access to Primary Health Care Teams → Health Promotion → Comprehensiveness → Quality of Health Care (Main Provider) → Quality of Health Care (General) → Confidence in Health Care System (0.032, $p < 0.01$).
- Access to Primary Health Care Teams → Access to Care (Unmet Needs) → Emergency Room Use (-0.285, $p < 0.05$).

The following indirect pathways achieved significance according to the joint significance of direct effects method only:

- Access to Primary Health Care Teams → Uncoordinated Care → Confidence in Health Care System (0.017, $p = 0.136$)
- Access to Primary Health Care Teams → Uncoordinated Care → Emergency Room Use (-0.015, $p = 0.125$)
- Access to Primary Health Care Teams → Uncoordinated Care → Hospitalization (-0.027, $p = 0.053$).

As shown in Figure 2, the mediator variables (processes of care) did not completely explain the association between access to primary health care teams and confidence in the health care system, given that there was still a significant direct effect. However, the direct relation between access to primary health care teams and confidence in the health care system is actually negative (-0.818; $p < 0.01$). The direct effect is independent of the mediating variables comprising processes of care, that is, it is the effect of access to primary health care teams on confidence in the health care system, with all intervening processes of care held constant. Therefore, perhaps the negative direct effect represents a phenomenon where respondents have

access to a team, but the various processes of care are not activated because the team is not dynamic in facilitating them. In other words, if a respondent has access to a primary health care team but the team does not function as such, confidence in health care in undermined. However, the indirect effects of access to primary health care teams on confidence in the health care system are all in the expected direction, such that when the processes of care are activated by the team in the anticipated directions, confidence in the health care system is correspondingly enhanced.

Regarding the outcome of emergency room use, significant indirect effects of access to primary health care teams were transmitted through both unmet needs (access) and uncoordinated care. Specifically, by reducing unmet needs and events of uncoordinated care, access to primary health care teams reduced emergency room use. Further, access to primary health care teams reduced hospitalization via a reduction in uncoordinated care. There was no remaining direct effect of access to primary health care teams on either emergency room use or hospitalization (Figures 3 and 4), implying that any impact of teams on these outcomes was fully mediated by these processes of care.

Limitations

The data used in this study are based on self-reports of experience accessing primary health care services in the previous 12 months. Thus, it was not possible to measure some important criteria of quality such as the degree to which patients received lab tests or procedures that experts recommend. As well, access to team-based care and the involvement of other health care professionals at respondents' regular place of care was determined from self-reports, although it is possible that patients are not able to discern the professional background of health care providers or medical office assistants. Self-reported data are also subject to recall bias.

Although the study was pan-Canadian, the limited sample size (n=2,120) may affect the statistical significance on key findings. Ddespite positive measures of fit for the SEM analysis, many statistically equivalent and theoretically meaningful competing models could exist. While it is beyond the scope of the present study to test alternative models, future research should address this issue.

Importantly, this study was exploratory, notably, the use of modification indices to uncover non-hypothesized relationships among the process of care variables. To determine their veracity, these relationships should be replicated in future studies. Finally, this project used cross-sectional analyses to identify outcomes of a new model of primary health care delivery (team-based care) in a country that has historically relied predominantly on family physician services. Since no information was available about the length of time that patients had access to teams, it could be that the impact of this new model of primary health care delivery on processes and outcomes that occur over longer time periods could be underestimated.

Conclusion

The unique contribution of this study is the use of data from the CSE-PHC to derive the first national estimates of access to primary health care teams and the impact of that access on care processes and outcomes. In 2007, 39% of Canadians aged 18 or older reported having access to a primary health care team at their regular place of care. Adults with chronic conditions and those in poorer health were more likely to have access to a primary health care team than were those without these health issues.

Canadians who reported that they had access to primary health care teams were more likely to receive care aimed at health promotion and disease prevention; this was particularly true among those who had chronic conditions. As well, people with chronic conditions who had team-based care were more likely to receive whole-person care and higher levels of care coordination, compared with those who did not have access to a team. They were also more likely to report receiving higher quality of health care. Therefore, another valuable finding is that primary health care teams have an impact on processes of care that have been identified as important to Canadians and to the First Ministers.

The results of the study indicate that access to primary health care teams reduces emergency room use through reductions in unmet needs and in uncoordinated care. It also reduces the risk of hospitalization through reductions in uncoordinated care.

Access to primary health care teams enhances confidence in the health care system indirectly through reductions in unmet needs and in uncoordinated care, and more positive ratings of the quality of health care in general. Access can also enhance confidence indirectly by increasing health promotion and disease prevention, which improves ratings of comprehensiveness

and the quality of the individual's own health care provider. This, in turn, increases ratings of the quality of health care in general, which enhances confidence.

However, the study results also demonstrate that having access to a primary health care team can have direct negative effects on confidence when experiences with those teams do not result in improved processes of care. That is, access to a primary health care team alone is not sufficient to improve overall confidence in the system - the team must truly function as a team and activate key processes to have a positive effect on confidence in the health care system. This is critical information for decision-makers and health care providers responsible for activating and optimizing the performance of primary health care teams.

Although the vast majority of Canadians have access to a regular medical doctor or place of care, improved access to and quality of primary health care services have emerged as policy priorities. Since 2000, substantial investments have been targeted at increasing the percentage of Canadians who have access to the most appropriate primary health care, which has frequently been identified as team-based care. This strategy is appealing, as it is expected that primary health care will increasingly emphasize health promotion and disease prevention and be more coordinated and comprehensive. On a more global level, access to primary health care teams has a positive influence on Canadians' perceptions of the overall quality of their health care system and the confidence they hold in it.

References

Allison PD. 2003. Missing data techniques for structural equation modeling. *Journal of Abnormal Psychology*. 112, 4: 545-557.

Asparouhov T. 2005. Sampling weights in latent variable modeling. *Structural Equation Modeling*. 12, 3: 411-434.

Bentler BP, Bonett DG. 1980. Significance tests and goodness-of-fit in the analysis of covariance structure. *Psychological Bulletin*. 88: 588–606.

Bentler PM. 1990. Comparative fit indexes in structural models. *Psychological Bulletin*. 107: 238-246.

Bentler PM, Chou CP. 1993. Some new covariance structure model improvement methods. *Multivariate Behavioral Research*. 28: 97-110

Browne MW, Cudeck R. 1993. Alternative ways of assessing model fit. In: *Testing Structural Equation Models*. Bollen KA and Long JS (eds.). Newbury Park: Sage. 136-162.

Canadian Intergovernmental Secretariat. 2000. *First Ministers Meeting: Communiqué on Health*. www.scics.gc.ca/cinfo00/800038004_e.html.

Flora DB, Curran PJ. 2004. An empirical evaluation of alternative methods of estimation for confirmatory factor analysis with ordinal data. *Psychological Methods*. 9, 4: 466-491.

Glasgow RE, Wagner EH, Schaefer J, et al. 2005. Development and validation of the Patient Assessment of Chronic Illness Care (PACIC). *Medical Care*. 43, 5: 436-444.

Government of Canada. 2007. *Primary Health Care Transition* Fund. www.hc-sc.gc.ca/hcs-sss/prim/phctf-fassp/index_e.html.

Haggerty J, Burge F, Lévesque JF, et al. 2007. Operational definitions of attributes of primary health care: consensus among Canadian experts. *Annals of Family Medicine*. 5, 4: 336-44.

Health Canada. 2003. *First Ministers' Accord on Health Care Renewal*. Ottawa: Government of Canada.

Health Canada. 2004. *First Ministers' Meeting on the Future of Health Care: A 10-year Plan to Strengthen Health Care*. Ottawa: Government of Canada. www.hc-sc.gc.ca/english/hca2003/fmm/index.html.

Kaplann D, Ferguson AJ. 1999. On the utilization of sample weights in latent variable models. *Structural Equation Modeling*. 6: 305-321.

Little RJ, Rubinn DB. 2002. *Statistical Analysis with Missing Data* (2nd ed.). New York: Wiley.

MacKinnon DP, Fairchild AJ, Fritz MS. Mediation analysis. *Annual Review of Psychology*. 58: 593-614.

MacKinnon DP, Lockwood CM, Hoffman JM,et al. 2002. A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods*. 7, 1: 83-104.

Maxwell J, Jackson K, Legowski B, et al. 2002. *Report on Citizens' Dialogue on the Future of Health Care in Canada*. Saskatoon: Commission on the Future of Health Care in Canada.

McDonald RP, Marsh HW. 1990. Choosing a multivariate model: Noncentrality and goodness-of-fit. *Psychological Bulletin*. 107: 247-255.

McIntosh CN. 2008. *Factor Analysis of Selected Modules from the Canadian Survey of Experiences with Primary Health Care (CSE-PHC)*. Health Information and Research Division Working Paper Series. Ottawa: Statistics Canada.

Muthén LK, Muthén BO. 2007. *Mplus User's Guide*. Los Angeles: Muthen and Muthen.

Muthén, B, du Toit SHC, Spisic D. In press: Robust inference using weighted least squares and quadratic estimating equations in latent variable modeling with categorical and continuous outcomes. *Psychometrika*.

Pollara Research. 2006. *Health Care in Canada Survey*. Toronto: MediResource Inc. www.hcic-sssc.ca.

Pollara Research. 2003. *Health Care in Canada Survey: Retrospective 1998–2003*. Toronto: Pollara Research. www.mediresource.com/e/pages/hcc_survey/pdf/HCiC_1998-2003_retro.pdf.

Soroka SN. 2007. *A Report to the Health Council of Canada: Canadians Perceptions of the Health Care System*. Toronto: Health Council of Canada.

Statistics Canada. 2007. *Canadian Survey of Experiences with Primary Health Care*. www.statcan.ca/cgi-bin/imdb/p2SV.pl?Function=getSurvey&SDDS=5138&lang=en&db=IMDB&dbg=f&adm=8&dis=2.

Steiger JH. 2000. Point estimation, hypothesis testing, and interval estimation using the RMSEA: Some comments and a reply to Hayduk and Glaser. *Structural Equation Modeling*. 7: 149-162.

Watson D. 2005. *Canadian Policy Context: Interdisciplinary Collaboration in Primary Health Care*. Ottawa: Enhancing Interdisciplinary Collaboration in Primary Health Care (EICP).

Watson DE, A.M. Broemeling, Reid RJ, Black C. 2004. *A Results-based Logic Model for Primary Health Care: Laying an Evidence-based Foundation to Guide Performance Measurement, Monitoring and Evaluation*. Vancouver: Centre for Health Services and Policy Research, University of British Columbia.

Watson D, Krueger H. 2005. *Primary Health Care Experiences and Preferences: Research Highlights*. Vancouver: Centre for Health Services and Policy Research, University of British Columbia.

Appendix

Table A1
Sample sizes

	Outcome modeled	Total	At least one chronic condition
Project 1	Primary Health Care Team	1,812	...
Project 2	Promotion/Prevention	1,282	618
	Within Care Coordination	1,355	645
	Quality of Primary Health Care	1,375	646
	Quality of Overall Health Care	1,353	637
	Access to Needed Care	1,799	754
	Comprehensive of Care	1,782	752
	PACIC – Whole Person Care	...	557
	PACIC – Coordination of Care	...	590
Project 3	Confidence in Health Care System	1,257	...
	Emergency Room Use	1,257	...

... not applicable
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table B1
Items used to define PACIC factors

Factor	Questions	Response categories
Whole person care	Over the past 6 months or when you last received care for your chronic condition(s): Were you asked how your chronic condition(s) affects your life? Were you asked questions about your health habits? Were you asked to talk about your goals in caring for your chronic condition(s)? Were you helped to set specific goals to improve your eating or exercise? Were you shown that what you did to take care of yourself influenced your chronic condition(s)? Were you given a written list of things you should do to improve your health? Were you helped to plan ahead so you could take care of your chronic condition even in hard times? Did your primary care provider consider your values and traditions when he/she recommended treatment to you? Were you helped to make a treatment plan that you could do in your daily life? Were you given a copy of your treatment plan? Were you satisfied that your care was well organized?	Almost always, most of the time, sometimes, generally not, or almost never.
Coordination of care	Over the past 6 months or when you last received care for your chronic condition(s): Were you encouraged to go to a specific group or class such as an educational seminar tohelp cope with your chronic condition? Were you encouraged to attend programs in the community such as support groups or exercise classes that could help you? Were you referred to a dietician, health educator, or counselor? Were you told how your visits with other types of doctors (e.g. specialists or surgeon) helped your treatment? Were you asked how your visits with other medical doctors were going? Were you contacted after a visit with your primary care providers to see how things were going?	Almost always, most of the time, sometimes, generally not, or almost never.

Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Tableau C1
Model fit assessment statistics for CFA

Fit statistic	Interpretation	Criterion values
X^2	Overall discrepancy between theoretical model and observed data.	A p-value >0 .05 indicates a well-fittting model.
CFI	Fit of the theoretical model relative to a null model where all observed variables are uncorrelated; ranges from 0 to 1; higher scores mean better fit.	Values ≥ 0.90 indicate a well-fitting model.
TLI	Fit of the theoretical model relative to a null model where all observed variables are uncorrelated; adjusts for model df; can fall outside 0-1 interval; higher values mean better fit.	Values ≥ 0.90 indicate a well-fitting model.
RMSEA	Lack of fit of the theoretical model, per model df; values range from 0 to +∞; lower values mean better fit.	Values ≤ 0.10 mean adequate fit.
LM test	Represents the reduction in model X^2 resulting from adding a specific path to the model.	Significant χ^2 values (evaluated on 1 df) means that the path would make a statistical improvement; modification must be defensible on theoretical and methodological grounds.
Probit regression coefficient	Regression coefficient for a binary or categorical outcome, where a truly continuous variable is assumed to underlie the observed categories; interpreted as the amount of standard deviation unit change in the continuous underlying variable corresponding to a one-unit increase in the predictor variable.	z-statistics ≤ -1.96 or ≥ + 1.96 indicate a significant impact at the 0.05 level.
Linear regression coefficient	Regression coefficient for a continuous outcome; interpreted as the unit change in the outcome variable corresponding to a one-unit increase in the predictor variable.	z-statistics ≤ -1.96 or ≥ + 1.96 indicate a significant impact at the 0.05 level.
Direct effect	Effect of one variable on another is an effect that is not transmitted through any intervening variables.	z-statistics ≤ -1.96 or ≥ + 1.96 indicate a significant impact at the 0.05 level.
Indirect effect	Effect of one variable on another is an effect that is transmitted through any intervening variables.	Dependent on the method used to assess indirect effect (see below)
Product of direct effects method for testing indirect effects	Point estimate of indirect effect is the product of all intervening direct effects along the "conduit" that connects two variables	z-statistics ≤ -1.96 or ≥ + 1.96 indicate a significant indirect effect at the 0.05 level.
Joint significance of direct effects method for testing indirect effects	No interpretable quantity representing the indirect effect is estimated, but its existence is inferred from the joint statistical significance of each and every direct effect that lies along the pathway connecting a pair of variables.	z-statistics ≤ -1.96 or ≥ + 1.96 for each and every direct effect along the pathway indicate the presence of a significant indirect effect.

Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table D1
Adjusted odds ratios relating selected characteristics to receiving 75% of health promotion/disease prevention needed, household population aged 18 or older with regular medical doctor or regular place of care, Canada, 2007

	Total (n=1,282)			At leat one chronic condition (n=618)		
	Adjusted odds ratio	95% confidence limits		Adjusted odds ratio	95% confidence limits	
		from	to		from	to
Access to a primary health care team						
Yes	1.297*	0.983	1.711	1.573**	1.023	2.418
No	1.000	...	...	1.000	...	...
Age						
18 to 44	1.000	...	...	1.000	...	...
45 to 64	1.310*	0.950	1.805	1.199	0.640	2.245
65 or older	0.694	0.409	1.176	0.755	0.329	1.735
Sex						
Male	1.000	...	...	1.000	...	...
Female	1.304*	0.970	1.752	1.323	0.857	2.043
Education						
Less than high school	1.434	0.915	2.246	1.452	0.796	2.650
High school or some postsecondary	1.434**	1.038	1.982	1.249	0.779	2.004
Postsecondary graduation	1.000	...	...	1.000	...	...
Other education or training	1.068	0.327	3.493	1.460	0.223	9.550
Employment						
Employed full-time	1.000	...	...	1.000	...	...
Employed part-time	0.902	0.575	1.417	1.022	0.420	2.489
Retired	1.203	0.708	2.044	1.119	0.531	2.358
Other[1]	1.016	0.667	1.548	1.076	0.512	2.259
Household income						
Less than or equal to $29,999	0.646*	0.400	1.044	0.952	0.442	2.049
$30,000 to $79,999	0.693*	0.475	1.012	0.939	0.476	1.852
Greater than or equal to $80,000	1.000	...	...	1.000	...	...
Missing	0.853	0.497	1.462	0.921	0.373	2.271
Self-reported health						
Excellent/Very good	1.000	...	...	1.000	...	...
Good	0.797	0.574	1.105	0.672	0.408	1.108
Fair/Poor	0.777	0.484	1.247	0.851	0.478	1.516
Selected chronic conditions[2]						
None	1.000	...	...	...	...	...
One	0.853	0.587	1.240	...	...	...
Two or more	1.231	0.846	1.791	...	...	...

... not applicable
* significantly different from estimate for reference category (p<0.10)
** significantly different from estimate for reference category (p<0.05)
1. For example, unemployed, student, stay-at-home parent.
2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).

Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health, and presence of chronic conditions. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.

Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table D2
Adjusted odds ratios relating selected characteristics to encountering at least one event of uncoordinated care, household population aged 18 or older with regular medical doctor or regular place of care, Canada, 2007

	Total (n=1,355)			At least one chronic condition (n=645)		
	Adjusted odds ratio	95% confidence limits		Adjusted odds ratio	95% confidence limits	
		from	to		from	to
Access to primary health care team						
Yes	0.939	0.687	1.283	1.236	0.798	1.914
No	1.000	...	...	1.000	...	...
Age						
18 to 44	1.000	...	...	1.000	...	...
45 to 64	0.561**	0.376	0.836	0.632	0.316	1.264
65 or older	0.447**	0.215	0.931	0.417*	0.150	1.162
Sex						
Male	1.000	...	...	1.000	...	...
Female	1.112	0.796	1.553	1.166	0.707	1.924
Education						
Less than high school	0.926	0.549	1.563	0.785	0.420	1.466
High school or some postsecondary	1.018	0.671	1.545	0.825	0.448	1.516
Postsecondary graduation	1.000	...	...	1.000	...	...
Other education or training	1.428	0.329	6.199	1.483	0.231	9.506
Employment						
Employed full-time	1.000	...	...	1.000	...	...
Employed part-time	1.604	0.877	2.930	2.176*	0.860	5.504
Retired	1.133	0.607	2.117	1.406	0.615	3.218
Other[1]	1.565*	0.969	2.527	1.201	0.567	2.546
Household income						
Less than or equal to $29,999	0.663	0.387	1.137	0.917	0.429	1.962
$30,000 to $79,999	0.644*	0.407	1.021	0.645	0.314	1.325
Greater than or equal to $80,000	1.000	...	...	1.000	...	...
Missing	0.494**	0.266	0.919	0.847	0.346	2.069
Self-reported health						
Excellent/Very good	1.000	...	...	1.000	...	...
Good	1.341	0.929	1.936	1.827**	1.012	3.298
Fair/Poor	3.026**	1.897	4.828	3.743**	1.978	7.082
Selected chronic conditions[2]						
None	1.000	...	...	...	...	...
One	1.203	0.766	1.891	...	...	...
Two or more	1.959**	1.210	3.172	...	...	...

... not applicable
* significantly different from estimate for reference category ($p<0.10$)
** significantly different from estimate for reference category ($p<0.05$)
1. For example, unemployed, student, stay-at-home parent.
2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).

Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health, and presence of chronic conditions. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.

Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table D3
Adjusted odds ratios relating selected characteristics to receiving fair/poor quality primary health care, household population aged 18 or older with regular medical doctor or regular place of care, Canada, 2007

	Total (n=1,375)			At least one chronic condition (n=646)		
	Adjusted odds ratio	95% confidence limits		Adjusted odds ratio	95% confidence limits	
		from	to		from	to
Access to primary health care team						
Yes	0.753	0.424	1.337	0.260**	0.084	0.802
No	1.000	...	...	1.000	...	...
Age						
18 to 44	1.000	...	...	1.000	...	...
45 to 64	0.499**	0.279	0.892	1.016	0.285	3.626
65 or older	0.429	0.114	1.609	0.489	0.069	3.481
Sex						
Male	1.000	...	...	1.000	...	...
Female	2.163**	1.227	3.814	1.882	0.650	5.452
Education						
Less than high school	0.707	0.266	1.878	0.616	0.144	2.631
High school or some postsecondary	1.120	0.585	2.145	1.662	0.539	5.128
Postsecondary graduation	1.000	...		1.000	...	...
Other education or training	0.678	0.119	3.853	...	...	...
Employment						
Employed full-time	1.000	...	...	1.000	...	...
Employed part-time	0.178**	0.042	0.754	0.169**	0.037	0.777
Retired	0.594	0.162	2.176	0.467	0.085	2.572
Other[1]	1.250	0.615	2.543	0.486	0.105	2.255
Household income						
Less than or equal to $29,999	2.523**	1.090	5.843	3.418	0.624	18.718
$30,000 to $79,999	1.929**	0.998	3.729	1.309	0.237	7.218
Greater than or equal to $80,000	1.000	...	...	1.000	...	...
Missing	0.872	0.255	2.983	0.677	0.081	5.683
Self-reported health						
Excellent/Very good	1.000	...	...	1.000	...	...
Good	1.910**	1.014	3.596	2.212	0.663	7.373
Fair/Poor	4.354**	1.639	11.564	4.195**	1.244	14.153
Selected chronic conditions[2]						
None	1.000	...	...	...	...	...
One	0.650	0.314	1.344	...	...	...
Two or more	0.689	0.257	1.842	...	...	...

... not applicable
* significantly different from estimate for reference category (p<0.10)
** significantly different from estimate for reference category (p<0.05)
1. For example, unemployed, student, stay-at-home parent.
2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).

Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health, and presence of chronic conditions. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.

Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table D4
Adjusted odds ratios relating selected characteristics to receiving excellent/very good quality primary health care, household population aged 18 or older with regular medical doctor or regular place of care, Canada, 2007

	Total (n=1,375)			At least one chronic condition (n=646)		
	Adjusted odds ratio	95% confidence limits		Adjusted odds ratio	95% confidence limits	
		from	to		from	to
Access to primary health care team						
Yes	1.073	0.781	1.475	1.459	0.874	2.436
No	1.000	...	...	1.000	...	...
Age						
18 to 44	1.000	...	...	1.000	...	...
45 to 64	1.206	0.809	1.800	1.053	0.456	2.430
65 or older	1.150	0.643	2.056	1.014	0.375	2.747
Sex						
Male	1.000	...	...	1.000	...	...
Female	0.997	0.716	1.387	1.063	0.588	1.922
Education						
Less than high school	0.984	0.581	1.666	0.893	0.393	2.029
High school or some postsecondary	1.010	0.709	1.439	0.960	0.488	1.887
Postsecondary graduation	1.000	...	...	1.000	...	...
Other education or training	1.558	0.438	5.546	0.534	0.067	4.254
Employment						
Employed full-time	1.000	...	...	1.000	...	...
Employed part-time	1.404	0.790	2.496	2.470	0.808	7.553
Retired	1.938**	1.089	3.450	2.055*	0.910	4.640
Other[1]	1.188	0.764	1.847	1.492	0.695	3.202
Household income						
Less than or equal to $29,999	0.796	0.469	1.349	0.554	0.220	1.393
$30,000 to $79,999	0.639**	0.406	1.006	0.507	0.210	1.220
Greater than or equal to $80,000	1.000	...	...	1.000	...	...
Missing	0.705	0.404	1.229	0.803	0.282	2.285
Self-reported health						
Excellent/Very good	1.000	...	...	1.000	...	...
Good	0.505**	0.344	0.742	0.446**	0.234	0.851
Fair/Poor	0.342**	0.201	0.582	0.294**	0.147	0.586
Selected chronic conditions[2]						
None	1.000	...	...	...	...	...
One	2.131**	1.383	3.283	...	...	...
Two or more	1.776**	1.058	2.981	...	...	...

... not applicable
* significantly different from estimate for reference category ($p<0.10$)
** significantly different from estimate for reference category ($p<0.05$)
1. For example, unemployed, student, stay-at-home parent.
2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).
Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health, and presence of chronic conditions. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table D5
Adjusted odds ratios relating selected characteristics to receiving fair/poor quality overall health care, household population aged 18 or older with regular medical doctor or regular place of care, Canada, 2007

	Total (n=1,353)			At least one chronic condition (n=637)		
	Adjusted odds ratio	95% confidence limits		Adjusted odds ratio	95% confidence limits	
		from	to		from	to
Access to primary health care team						
Yes	0.719	0.439	1.177	0.395**	0.177	0.879
No	1.000	...	...	1.000	...	...
Age						
18 to 44	1.000	...	...	1.000	...	...
45 to 64	0.550**	0.318	0.951	0.858	0.219	3.363
65 or older	0.739	0.274	1.994	0.732	0.140	3.821
Sex						
Male	1.000	...	...	1.000	...	...
Female	1.713**	1.008	2.912	1.931	0.723	5.158
Education						
Less than high school	0.440*	0.181	1.069	0.277**	0.094	0.812
High school or some postsecondary	0.782	0.425	1.440	1.157	0.390	3.431
Postsecondary graduation	1.000	...	...	1.000	...	...
Other education or training	1.418	0.387	5.196	14.608**	1.200	177.888
Employment						
Employed full-time	1.000	...	...	1.000	...	...
Employed part-time	0.422	0.121	1.476	0.264*	0.060	1.160
Retired	0.547	0.216	1.388	0.554	0.137	2.233
Other[1]	1.470	0.790	2.736	0.909	0.283	2.920
Household income						
Less than or equal to $29,999	1.600	0.743	3.446	1.641	0.319	8.433
$30,000 to $79,999	1.322	0.683	2.557	0.644	0.133	3.115
Greater than or equal to $80,000	1.000	...	...	1.000	...	...
Missing	0.729	0.261	2.035	0.385	0.054	2.728
Self-reported health						
Excellent/Very good	1.000	...	...	1.000	...	...
Good	2.462**	1.379	4.397	4.105**	1.439	11.709
Fair/Poor	7.017**	3.048	16.155	11.865**	4.104	34.300
Selected chronic conditions[2]						
None	1.000	...	...	...	...	...
One	0.445**	0.212	0.933	...	...	...
Two or more	0.707	0.314	1.589	...	...	...

... not applicable
* significantly different from estimate for reference category ($p<0.10$)
** significantly different from estimate for reference category ($p<0.05$)
1. For example, unemployed, student, stay-at-home parent.
2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).

Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health, and presence of chronic conditions. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.

Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table D6
Adjusted odds ratios relating selected characteristics to receiving excellent/very good quality overall health care, household population aged 18 or older with regular medical doctor or regular place of care, Canada, 2007

	Total (n=1,353)			At least one chronic condition (n=637)		
	Adjusted odds ratio	95% confidence limits		Adjusted odds ratio	95% confidence limits	
		from	to		from	to
Access to primary health care team						
Yes	1.225	0.915	1.639	1.645**	1.041	2.601
No	1.000	...	...	1.000	...	...
Age						
18 to 44	1.000	...	...	1.000	...	...
45 to 64	1.337	0.914	1.955	0.891	0.435	1.825
65 or older	1.032	0.576	1.852	0.676	0.268	1.702
Sex						
Male	1.000	...	...	1.000	...	...
Female	0.995	0.726	1.364	1.368	0.812	2.305
Education						
Less than high school	0.954	0.587	1.550	0.975	0.503	1.889
High school or some postsecondary	1.115	0.794	1.565	1.193	0.699	2.037
Postsecondary graduation	1.000	...	...	1.000	...	...
Other education or training	0.657	0.133	3.245	0.576	0.068	4.888
Employment						
Employed full-time	1.000	...	...	1.000	...	...
Employed part-time	0.939	0.559	1.579	1.222	0.400	3.732
Retired	2.281**	1.310	3.972	2.153*	0.942	4.922
Other[1]	1.327	0.864	2.038	1.412	0.677	2.945
Household income						
Less than or equal to $29,999	0.983	0.583	1.657	0.792	0.333	1.883
$30,000 to $79,999	0.909	0.604	1.369	0.661	0.320	1.367
Greater than or equal to $80,000	1.000	...	...	1.000	...	...
Missing	0.851	0.484	1.497	0.765	0.277	2.113
Self-reported health						
Excellent/Very good	1.000	...	...	1.000	...	...
Good	0.407**	0.282	0.586	0.396**	0.220	0.710
Fair/Poor	0.296**	0.179	0.492	0.319**	0.170	0.600
Selected chronic conditions[2]						
None	1.000	...	...	...	...	...
One	1.921**	1.285	2.870	...	...	...
Two or more	1.382	0.865	2.209	...	...	...

... not applicable
* significantly different from estimate for reference category ($p<0.10$)
** significantly different from estimate for reference category ($p<0.05$)
1. For example, unemployed, student, stay-at-home parent.
2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).

Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health, and presence of chronic conditions. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.

Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table D7
Adjusted odds ratios relating selected characteristics to not being able to access health care when needed, household population aged 18 or older with regular medical doctor or regular place of care, Canada, 2007

	Total (n=1,799)			At least one chronic condition (n=754)		
	Adjusted odds ratio	95% confidence limits		Adjusted odds ratio	95% confidence limits	
		from	to		from	to
Access to primary health care team[1]						
Yes	0.763	0.497	1.171	0.618	0.334	1.145
No	1.000	...	...	1.000	...	...
Age						
18 to 44	1.000	...	...	1.000	...	...
45 to 64	0.795	0.470	1.345	0.976	0.379	2.516
65 or older	0.431*	0.169	1.101	0.468	0.116	1.890
Sex						
Male	1.000	...	...	1.000	...	...
Female	1.314	0.843	2.048	1.200	0.593	2.427
Education						
Less than high school	0.782	0.403	1.519	0.595	0.234	1.513
High school or some postsecondary	0.920	0.541	1.564	1.060	0.456	2.464
Postsecondary graduation[2]	1.000	...	...	1.000	...	...
Other education or training	0.444	0.107	1.835			
Employment						
Employed full-time	1.000	...	...	1.000	...	...
Employed part-time	0.778	0.418	1.446	0.613	0.155	2.425
Retired	0.904	0.390	2.093	1.535	0.420	5.604
Other[2]	1.138	0.659	1.965	2.177	0.756	6.268
Household income						
Less than or equal to $29,999	1.553	0.769	3.138	1.254	0.414	3.798
$30,000 to $79,999	1.533	0.843	2.788	0.973	0.347	2.729
Greater than or equal to $80,000	1.000	...	...	1.000	...	...
Missing	0.821	0.327	2.059	0.144**	0.022	0.944
Self-reported health						
Excellent/Very good	1.000	...	...	1.000	...	...
Good	1.817**	1.146	2.883	2.260**	0.998	5.119
Fair/Poor	5.004**	2.743	9.129	3.447**	1.466	8.109
Selected chronic conditions[3]						
None	1.000	...	...	...	...	...
One	0.694	0.395	1.219	...	...	...
Two or more	1.080	0.584	2.000	...	...	...

... not applicable
* significantly different from estimate for reference category ($p<0.10$)
** significantly different from estimate for reference category ($p<0.05$)
1. For example, unemployed, student, stay-at-home parent.
2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).

Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health, and presence of chronic conditions. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.

Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table D8
Adjusted odds ratios relating selected characteristics to receiving a comprehensive range of health care services, household population aged 18 or older with regular medical doctor or regular place of care, Canada, 2007

	Total (n=1,782)			At least one chronic condition (n=752)		
	Adjusted odds ratio	95% confidence limits		Adjusted odds ratio	95% confidence limits	
		from	to		from	to
Access to primary health care team						
Yes	1.319	0.837	2.080	1.502	0.675	3.341
No	1.000	...	...	1.000	...	...
Age						
18 to 44	1.000	...	...	1.000	...	...
45 to 64	1.073	0.590	1.951	1.000	0.285	3.502
65 or older	1.635	0.644	4.155	1.358	0.319	5.785
Sex						
Male	1.000	...	...	1.000	...	...
Female	0.682	0.416	1.118	0.693	0.318	1.512
Education						
Less than high school	1.981*	0.877	4.472	1.554	0.512	4.716
High school or some postsecondary	1.363	0.807	2.301	1.114	0.454	2.734
Postsecondary graduation	1.000	...	...	1.000	...	...
Other education or training	0.504	0.142	1.787			
Employment						
Employed full-time	1.000	...	...	1.000	...	...
Employed part-time	2.154	0.743	6.244	1.292	0.221	7.556
Retired	0.982	0.436	2.211	0.708	0.207	2.426
Other[1]	0.481**	0.254	0.909	0.441	0.142	1.365
Household income						
Less than or equal to $29,999	0.396**	0.174	0.900	0.486	0.111	2.123
$30,000 to $79,999	0.577	0.293	1.136	0.775	0.193	3.118
Greater than or equal to $80,000	1.000	...	...	1.000	...	...
Missing	0.842	0.295	2.402	1.478	0.220	9.935
Self-reported health						
Excellent/Very good	1.000	...	...	1.000	...	...
Good	0.869	0.507	1.491	0.593	0.256	1.372
Fair/Poor	0.400**	0.190	0.840	0.556	0.218	1.419
Selected chronic conditions[2]						
None	1.000	...	...	...	...	...
One	1.043	0.574	1.896	...	...	...
Two or more	1.193	0.585	2.434	...	...	...

... not applicable
* significantly different from estimate for reference category ($p<0.10$)
** significantly different from estimate for reference category ($p<0.05$)
1. For example, unemployed, student, stay-at-home parent.
2. Arthritis, chronic obstructive pulmonary disease, heart disease, cancer, high blood pressure, diabetes, and mood disorders (including depression).
Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health, and presence of chronic conditions. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table D9
Adjusted beta estimates relating selected characteristics to PACIC "whole person care" factor summary score , household population aged 18 or older with regular medical doctor or regular place of care and at least one chronic condition, Canada, 2007

	(n=557)		
	Adjusted beta	95% confidence limits	
		from	to
Access to primary health care team			
Yes	13.578**	8.372	18.783
No	1.000	...	...
Age			
18 to 44	1.000	...	...
45 to 64	-2.405	-9.925	5.116
65 or older	-16.451**	-26.401	-6.500
Sex			
Male	1.000	...	...
Female	-3.942	-9.733	1.849
Education			
Less than high school	2.615	-4.878	10.107
High school or some postsecondary	-4.055	-11.413	3.304
Postsecondary graduation	1.000	...	...
Other education or training	-6.027	-35.813	23.759
Employment			
Employed full-time	1.000	...	...
Employed part-time	-4.559	-15.088	5.969
Retired	7.132	-1.862	16.126
Other[1]	-2.232	-10.324	5.859
Household income			
Less than or equal to $29,999	-2.318	-11.797	7.162
$30,000 to $79,999	3.432	-5.214	12.079
Greater than or equal to $80,000	1.000	...	...
Missing	-8.175	-18.236	1.886
Self-reported health			
Excellent/Very good	1.000	...	...
Good	-6.397**	-12.591	-0.202
Fair/Poor	-0.961	-8.758	6.837

... not applicable
* significantly different from estimate for reference category (p<0.10)
** significantly different from estimate for reference category (p<0.05)
1. For example, unemployed, student, stay-at-home parent.
Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table D10
Adjusted beta estimates relating selected characteristics to Patient Assessment of Chronic Illness Care "coordination of care" factor summary score, household population aged 18 or older with regular medical doctor or regular place of care and at least one chronic condition, Canada, 2007

	(n=590)		
	Adjusted beta	95% confidence limits	
		from	to
Access to primary health care team			
Yes	1.288**	0.045	2.531
No	1.000	...	...
Age			
18 to 44	1.000	...	...
45 to 64	1.148	-0.762	3.058
65 or older	-0.423	-2.835	1.989
Sex			
Male	1.000	...	...
Female	0.271	-1.081	1.622
Education			
Less than high school	-0.038	-1.928	1.852
High school or some postsecondary	-0.515	-2.050	1.020
Postsecondary graduation	1.000	...	...
Other education or training	0.667	-5.600	6.934
Employment			
Employed full-time	1.000	...	...
Employed part-time	-0.348	-2.638	1.943
Retired	0.408	-1.623	2.438
Other[1]	0.424	-1.622	2.470
Household income			
Less than or equal to $29,999	0.167	-2.131	2.466
$30,000 to $79,999	-0.280	-2.325	1.765
Greater than or equal to $80,000	1.000	...	...
Missing	-0.317	-2.824	2.190
Self-reported health			
Excellent/Very good	1.000	...	...
Good	-0.643	-2.042	0.756
Fair/Poor	0.857	-0.875	2.590

... not applicable
* significantly different from estimate for reference category ($p<0.10$)
** significantly different from estimate for reference category ($p<0.05$)
1. For example, unemployed, student, stay-at-home parent.
Notes: Analysis pertains to respondents with a valid response on outcome and no missing responses on primary health care team, education, employment, self-reported health. A primary health care team is a nurse or other health professionals (e.g., dietitians, nutritionists) or both in addition to primary health care provider and other doctors.
Source: 2007 Canadian Survey of Experiences with Primary Health Care.

Table E1
Distribution of outcomes of care, household population aged 18 or older, Canada, 2007

	Total (n=2,194)					At least one chronic condition (n=876)				
	Sample size	Estimated population		95% confidence limits		Sample size	Estimated population		95% confidence limits	
	number	000s	%	from	to	number	000s	%	from	to
Confident you will get quality/safe care when you need it?										
Very confident	608	6,798	27.14	24.99	29.57	275	2,731	32.65	28.69	36.22
Somewhat confident	1,084	12,544	50.07	47.54	52.55	394	3,662	43.78	40.19	48.09
Not very confident	376	4,315	17.22	15.28	19.06	149	1,427	17.06	13.96	20.08
Not at all confident	112	1,395	5.57	4.37	6.64	51	544	6.51	4.40	8.37
Your confidence in the Canadian health system is:										
Rising	185	2,189	8.86	7.31	10.31	97	1,022	12.38	9.57	15.03
Falling	743	8,249	33.38	30.98	35.86	324	3,037	36.78	32.87	40.80
About the same as it ever was	1,223	14,277	57.77	55.28	60.26	436	4,199	50.84	46.74	54.99
What approach would you say that Canada's health system requires at present?										
A complete rebuilding from the ground up	183	2,124	8.66	7.41	10.06	64	673	8.27	6.31	10.39
Some fairly major repairs	893	9,680	39.48	37.24	42.18	399	3,636	44.69	41.17	49.07
Some minor tuning up	887	10,878	44.37	41.49	46.61	320	3,248	39.92	35.34	43.43
Everything is fine the way it is	167	1,834	7.48	6.13	8.87	63	579	7.12	5.00	9.29
How many times have you personally used a hospital emergency department, in the past 12 months?										
None	1,642	19,114	76.14	73.94	78.24	586	5,641	67.16	63.19	71.10
At least once	545	5,990	23.86	21.76	26.06	287	2,758	32.84	28.90	36.81
In the past 12 months, have you been an overnight patient in a hospital, nursing home or convalescent home?										
Yes	215	2,428	9.65	8.24	11.08	125	1,273	15.13	12.22	18.05
No	1,971	22,672	90.06	88.59	91.50	747	7,122	84.63	81.66	87.56

Note: Percentages may not add to 100% because of missing, refusal and "don't know" responses.
Source: 2007 Canadian Survey of Experiences with Primary Health Care.